

ABSTRACT OF THE DISCLOSURE

A bearing system for a turbocharger shaft includes an elongated bearing carrier with two anti-friction ball bearings mounted in its ends and with a radially extending flange at one end that cooperates with stationary housing portions and carries thrust loads of the rotor in both directions. The elongated bearing carrier is supported within the housing by axially spaced elastic supports which permit the rotating assembly to rotate about its mass center and provide a shock and vibration cushion. The elongated bearing carrier and housing cooperate to provide a coolant cavity which communicates with the outside periphery of the elongated bearing carrier between the axially spaced elastic supports, which also act as coolant seals between the elongated bearing cavity and the bearing housing. The coolant cavity protects the bearing system and anti-friction ball bearings from heat conducted from the exhaust gas-driven turbine and also cools the housing. In addition, an externally mounted motor-generator may be carried by the turbocharger and its rotor may be connected to the turbocharger rotor by a coupling that stays connected throughout the entire operating speed range of the turbocharger, and the motor-generator electronic control is mounted on the motor housing, which is cooled by air being drawn into the turbocharger compressor.